

CLAIMS

What is claimed is:

1. An isolated polynucleotide comprising:

- (a) a first nucleotide sequence encoding a first polypeptide comprising at least 50 amino acids, wherein the amino acid sequence of the first polypeptide and SEQ ID NO:2, SEQ ID NO:4, or SEQ ID NO:12 have at least 70% identity based on the Clustal alignment method,
- (b) a second nucleotide sequence encoding a second polypeptide comprising at least 100 amino acids, wherein the amino acid sequence of the second polypeptide and SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:18, or SEQ ID NO:20 have at least 70% identity based on the Clustal alignment method,
- (c) a third nucleotide sequence encoding a third polypeptide comprising at least 180 amino acids, wherein the amino acid sequence of the third polypeptide and SEQ ID NO:24 have at least 70% identity based on the Clustal alignment method,
- (d) a fourth nucleotide sequence encoding a fourth polypeptide comprising at least 230 amino acids, wherein the amino acid sequence of the fourth polypeptide and SEQ ID NO:22 have at least 70% identity based on the Clustal alignment method, or
- (e) a fifth nucleotide sequence encoding a fifth polypeptide comprising at least 100 amino acids, wherein the amino acid sequence of the fifth polypeptide and SEQ ID NO:6, SEQ ID NO:8, or SEQ ID NO:10 have at least 80% identity based on the Clustal alignment method.

2. The isolated polynucleotide of Claim 1, wherein the first polypeptide comprises 100 amino acids.

3. The isolated polynucleotide of Claim 1, wherein the first polypeptide comprises SEQ ID NO:2, SEQ ID NO:4, or SEQ ID NO:12, wherein the second polypeptide comprises SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:18, or SEQ ID NO:20, wherein the third polypeptide comprises SEQ ID NO:24, wherein the fourth polypeptide comprises SEQ ID NO:22, and wherein the fifth polypeptide comprises SEQ ID NO:6, SEQ ID NO:8, or SEQ ID NO:10.

4. The isolated polynucleotide of Claim 1, wherein the first nucleotide sequence comprises SEQ ID NO:1, SEQ ID NO:3, or SEQ ID NO:11, wherein the second nucleotide sequence comprises SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:17, or SEQ ID NO:19, wherein the third nucleotide sequence comprises SEQ ID NO:23, wherein the fourth nucleotide sequence comprises SEQ ID NO:21, and wherein the fifth nucleotide sequence comprises SEQ ID NO:5, SEQ ID NO:7, or SEQ ID NO:9.

5. The isolated polynucleotide of Claim 1, wherein the first, second, third, fourth, and fifth polypeptides are WUS proteins.

6. The complement of the polynucleotide of any of Claims 1-5, wherein the complement and the polynucleotide consist of the same number of nucleotides and are 100% complimentary.

7. The isolated polynucleotide of any of Claims 1-5 wherein the polynucleotide is a functional RNA.

8. The complement of Claim 6, wherein the complement is a functional RNA.

9. A method for transiently modulating the level of WUS protein in a plant cell comprising introducing the isolated polynucleotide of Claim 7 into a plant cell.

10. A method for transiently modulating the level of WUS protein in a plant cell comprising introducing the isolated polynucleotide of Claim 8 into a plant cell.

11. A chimeric gene comprising the polynucleotide of any of Claims 1-5 operably linked to a suitable regulatory sequence.

12. A transgenic plant comprising the chimeric gene of Claim 11.

13. The transgenic plant of Claim 12, wherein the plant is corn, soybean, wheat, rice, alfalfa, sunflower, canola, or cotton.

14. A seed from the transgenic plant of Claim 12.

15. The seed of Claim 14, wherein the seed is from corn, soybean, wheat, rice, alfalfa, sunflower, canola, or cotton.

16. The isolated polypeptide encoded by the first, second, third, fourth, or fifth nucleotide sequence comprised by the polynucleotide of any of Claims 1-5.

17. A method for transiently modulating the level of WUS protein in a plant cell comprising introducing the isolated polypeptide of Claim 16 into a plant cell.

18. A method for inducing meristem proliferation in a plant cell comprising introducing the isolated polypeptide of Claim 16 into a plant cell.

19. A method for inducing meristem proliferation in a plant cell comprising:

- (a) transforming a plant cell with the chimeric gene of Claim 11, and
- (b) inducing the expression of the polynucleotide for a time sufficient to produce a transformed meristem.

20. The method of Claim 19 further comprising growing the transformed meristem under plant growing conditions to produce a regenerated plant.

21. A plant produced by the method of Claim 20.

22. The plant of Claim 21, wherein the plant is corn, soybean, wheat, rice, alfalfa, sunflower, canola, or cotton.

23. A method for positive selection of a transformed cell, comprising:

- (a) transforming a plant cell with the chimeric gene of Claim 11, and

(b) inducing expression of the polynucleotide for a time sufficient to induce organogenesis a provide a positive selection means.

24. The method of Claim 23 wherein the polynucleotide is excised.

5 25. The method of Claim 24 wherein the polynucleotide is flanked by FRT sequences to allow FLP mediated excision of the polynucleotide.

26. A method for transforming a cell comprising introducing the polynucleotide of any of Claims 1-5 into a cell.

27. The cell produced by the method of Claim 26.

10 28. A method for transforming a cell comprising introducing the complement of Claim 6 into a cell.

29. The cell produced by the method of Claim 28.

30. A polynucleotide fragment comprising a nucleotide sequence comprised by the polynucleotide of any of Claims 1-5, wherein the nucleotide sequence contains at least 30 nucleotides.

15 31. The polynucleotide fragment of Claim 30, wherein the nucleotide sequence contains at least 40 nucleotides.

32. The polynucleotide fragment of Claim 30, wherein the nucleotide sequence contains at least 60 nucleotides.

20 33. A polynucleotide fragment comprising a nucleotide sequence comprised by the complement of Claim 6, wherein the nucleotide sequence contains at least 30 nucleotides.

34. The polynucleotide fragment of Claim 33, wherein the nucleotide sequence contains at least 40 nucleotides.

35. The polynucleotide fragment of Claim 33, wherein the nucleotide sequence contains at least 60 nucleotides.

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